

# Typification of Schlechter's Costa Rican Orchidaceae

## I. Types Collected by A. Brenes

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### Abstract

Types have been found for 89 of the 92 orchid species described by Rudolph Schlechter from the collections of Alberto M. Brenes. Species in the following genera are typified: *Barbosella*, *Brenesia*, *Camaridium*, *Campylocentrum*, *Catasetum*, *Cryptocentrum*, *Dichaea*, *Elleanthus*, *Encyclia*, *Epidendrum*, *Fractiunguis*, *Habenaria*, *Hexadesmia*, *Leochilus*, *Lepanthes*, *Masdevallia*, *Maxillaria*, *Microstylis*, *Mormodes*, *Notylia*, *Oncidium*, *Ornithidium*, *Pleurothallis*, *Polystachya*, *Pontheiva*, *Sepalosaccus*, *Sobralia*, *Stelis*, and *Systeloglossum*. *Kefersteinia alba* Schltr., *Pleurothallis ciliilabia* Schltr., and *Telipogon gracilipes* Schltr. are not typified due to the lack of specimens or other evidence regarding their status. Names proposed to replace illegitimate names based on Brenes's orchid collections, *Maxillaria umbracilis* L. O. Wms., *M. angustissima* Ames & C. Schweinf., *M. flava* Ames & C. Schweinf., and *Pleurothallis integrilabia* Ames, Hubbard, & C. Schweinf., are also typified.

### Introduction

Typification of Rudolph Schlechter's orchid species has been difficult since the holotypes were destroyed in a fire following the bombing of Berlin on March 1, 1943 (Ames, 1944; Pilger, 1953; Butzin, 1978). Some species have been lectotypified in revisions (e.g., Garay, 1974, 1978), but most have not been examined (Blaxell, 1973, 1978).

The problem is particularly acute because of Schlechter's productivity. In the summer of 1893,

he told A. B. Rendle that one of his goals was to describe at least one new species every day (Rendle, 1926). In pursuing that goal, he published more than 300 scientific papers in his lifetime, most dealing with orchid taxonomy (Loesener, 1926). Schlechter described more than 400 species of orchids from Costa Rica alone, though most of these are now regarded as synonyms of older names.

Schlechter (fig. 1) first became acquainted with Costa Rican orchids through the collections of H. Pittier (Schlechter, 1918). He was soon identifying and describing material for the collectors then working with Pittier, including P. Biolley, A. Tonzuz, O. Jiménez, K. Wercklé, Alfred Brade and his brother Curt, G. Acosta, and Alberto Brenes. This work culminated in the publication of the second part of Schlechter's *Beiträge zur Orchideenkunde von Zentralamerika* (1923) which dealt with Costa Rican species. More than half of the work is based on material collected by Brenes, reflecting an affiliation that began around 1900 and lasted until Schlechter's death in 1924.

Alberto Brenes (fig. 2) was a Costa Rican, born in San Ramón on Sept. 2, 1870. He studied in Costa Rican schools until 1890 when he left to complete his studies in Europe. He stayed in Paris for a short time and then moved to the University of Lausanne. He remained in Lausanne for one year and then moved to the University of Geneva, where he stayed until 1898, taking botany and natural history courses with Professors Renvier, Doufour, Chodat, and Briquet (Jiménez, 1945).

While Brenes was away, Pittier established his Instituto Físico-Geográfico Costarricense, a government department devoted to the natural sci-



FIG. 1. Portrait of Rudolph Schlechter (Field Museum collection).

ences (Jiménez, 1954). The Herbario Nacional de Costa Rica was a part of the Instituto and grew under the autocratic influence of Pittier (Gómez, 1978). When Pittier left the country in 1903, the herbarium was taken over by the Museo Nacional, a separate government institute.

When Brenes returned in 1898, he resumed collecting with Pittier, Biolley, and Tonduz in his spare time, while teaching at the Escuela de Farmacia in San José. He left this post for health reasons and returned to San Ramón in 1903 (León, 1945). He worked for a few years at the Colegio de San Luis Gonzaga before transferring to the Escuela Normal in 1911. In 1920 he became the head of the Botany Section at the Museo Nacional, a position he would hold until 1935.

In 1921 Brenes began a series of collections that would eventually total more than 23,000 numbers (León, 1945). He usually collected around San Ramón, at elevations from 900 to 1,400 m (fig. 3). These collections are of great importance because this is an unusually rich area, spanning a broad gap between the Cordillera Central and the Cordillera de Tilarán. Moisture-laden winds from the Caribbean plain are forced up the eastern slope and across the gap, creating areas of cloud forest at unusually low altitudes. Furthermore, Brenes

collected during a period of agricultural growth, when farms were being expanded and forests cleared for development. The new pastures often contained small forest patches, accessible from the roads.

Before 1924 the primary set of Brenes's collections was deposited at Costa Rica, although the unicates of many groups were sent to specialists. Schlechter received most of Brenes's orchid collections during this period. Later, at the suggestion of P. C. Standley, Brenes sent his primary set to Field Museum and his orchids to Oakes Ames at Harvard (Jiménez, 1945; León, 1945). The specimens that remained at the Museo Nacional were stored on open shelves and were subject to insect damage. Some specimens were lost when the Museo had to be closed for financial reasons and the specimens were boxed and stored (Jiménez, 1954).

Under the direction of Luis Diego Gómez P., a new herbarium building with climate-controlled herbarium and metal cases was built in 1977–1978. Many of the type specimens, which were stored unmarked with the regular collections, have now been identified and moved to the type herbarium.

## Methods

While compiling a checklist of Costa Rican Orchidaceae, I found that it was difficult to evaluate many of the described species due to the absence of types. The herbaria that house Brenes's (B) orchid collections—Ames Orchid Herbarium (AMES), Museo Nacional de Costa Rica (CR), Field Museum (F), New York Botanical Garden (NY), and U.S. National Herbarium (US) (León, 1945)—were searched for type material. Specimens at the Museo Nacional were usually given priority in lectotypification because the primary set of Brenes's material collected before 1924 is stored there. Exceptions were made if the material at the Museo lacked flowers or was extensively damaged, or if adequate material at another herbarium was used as the basis for a monographic or floristic treatment.

An extensive collection of analytical drawings kept at the Ames Herbarium are an excellent resource for understanding Schlechter's concepts and the critical characters he cites in descriptions. The collection includes copies of Schlechter's analytical sketches of new species, tracings of the holotypes, and drawings made under Schlechter's supervision. Ames (1944, p. 106) described how the collection was acquired:



Dr. Schlechter always made helpful analytical sketches of the plants he studied and at my request an artist was employed to make for me not only copies of these sketches but tracings from the type specimens from which they were based. After his death his wife, Alexandra Schlechter, continued to have drawings made for me so that in time my herbarium contained a useful record of a large number of Schlechter's types with emphasis on the orchids of Middle America.

Mansfeld (1931) collected, retouched, and published some of these drawings, but very few Costa Rican species were included.

When no isotypes are available, the published protologue becomes the most important factor for determining the species. The drawings may be designated as lectotypes following Article 9.3 of the International Code (Voss et al., 1983), but they must be used with caution. They are copies, not originals, and are sometimes inaccurate, especially in depicting fine detail in some Pleurothallidinae or in *Elleanthus*. The analytical sketches show only the floral details and may not show characters useful for distinguishing the species. However, they offer a good indication of Schlechter's concept of a group and should be used as long as they agree with the published protologue and adequately distinguish the species.

When no types or adequate drawings were available and the protologue was sufficiently diagnostic, neotypes were selected following the criteria suggested by the International Code (Voss et al., 1983).

It is sometimes difficult to interpret Brenes's labels. Brenes wrote most of his labels in French in handwriting that grew more cramped as he aged. His labels on material at the Museo Nacional and Field Museum often have two to four different numbers, in addition to the herbarium number of the Museo Nacional. The Museo Nacional numbers are the only numbers that follow a distinct order and are never repeated; they should be cited whenever possible. If the Museo Nacional number is not available, then the collection date should be cited. It appears that Brenes used a series of numbers to keep track of the specimens he sent to experts and personal herbarium numbers that were updated as his collection grew larger (L. D. Gómez, pers. comm.). On type sheets all but one or two of the numbers are usually crossed out, the remaining numbers corresponding to those cited in the original publication. On distributed sheets types usually have only the cited number, while the oth-



FIG. 2. Portrait of Alberto M. Brenes (Hunt Library collection).

ers usually have a Brenes herbarium number and a number for identifications. Very few of the sheets at Costa Rica have Schlechter annotations: however, all identified sheets are marked with the name of the person who identified the specimen, written in by Brenes.

In the following list, the specimens from Costa Rica are cited followed by the Museo Nacional accession number. Specimens from other herbaria are cited with the Brenes herbarium number in parentheses; lectotypes selected by others are cited.

### Types for Schlechter's Orchids Based on Brenes's Collections

*Barbosella brenesii* Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 201. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Nov. 1921, *Brenes 165* (holotype, B, destroyed; lectotype, here designated, CR 26171!; isotype, AMES!; drawings, AMES!; photograph, *EX CR!*).

The type at CR has a number of flowers in a

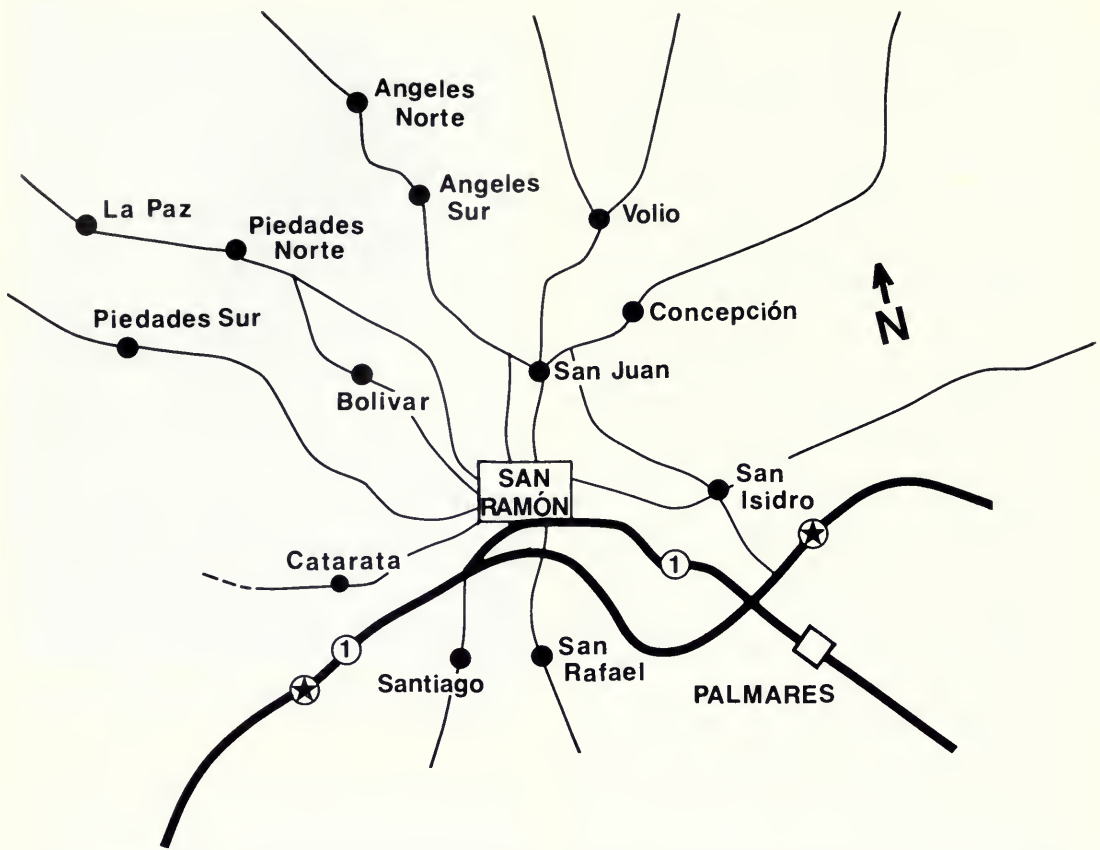


FIG. 3. Map of Brenes's collecting localities near San Ramón. All roads are extant. Star indicates Carretera Interamericana; 1 indicates Ruta 1.

packet and is in good condition. The name is a synonym of *Barbosella monstrabilis* (Ames) Garay.

***Brenesia costaricensis*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 200. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,200 m, Sept. 1921, *Brenes 117* (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, CR 18505!; drawings, AMES!; photographs, F ex CR!).

The specimen at Costa Rica is sterile, while the specimen at AMES has flowers and is in good condition. The name is a synonym of *Pleurothallis johnsonii* Ames. This is the type species of the genus *Brenesia* Schltr.

***Camaridium simile*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 239. 1923. TYPE: Costa Rica,

Prov. Alajuela, San Pedro de San Ramón, 1,025 m, July 1921, *Brenes 64* (holotype, B, destroyed; lectotype, here designated, AMES!; isotypes, NY!, CR 18497!; drawings, AMES!; photograph, F ex CR!).

The specimen at CR is sterile, while the specimens at AMES and NY are fertile and in good condition. The specimen at AMES is selected because it was studied by Ames and Schweinfurth. Additional floral details are seen in the drawings at AMES. Schlechter (1923) distinguished this species from *Camaridium dendrobioides* Schltr. by its larger flowers, different color, and minute differences of the lip, but the two are nearly identical. Both are synonyms of *Maxillaria dendrobioides* (Schltr.) L. O. Wms.

***Camaridium vinosum*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 240. 1923. *non Maxillaria*



*vinosa* Rolfe (1922). TYPE: Costa Rica, Prov. Alajuela, Distrito Volio de San Ramón, 1,270 m, Jan. 1922, *Brenes 234* (holotype, B, destroyed; lectotype, here designated, CR 18490!; isotypes, AMES!, NY!; photograph, F ex CR!).

The lectotype is in good condition. The name is a synonym of *Maxillaria umbracilis* L. O. Wms.

**Campylocentrum acutum** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 268. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,075–1,100 m, Nov. 1921, *Brenes 147* (holotype, B, destroyed; holotype fragment, AMES!; isotype, CR 18480!; drawings, AMES!; photographs, F ex CR!).

The holotype fragment is not the only known type material. The isotype at CR has good vegetative material and a single mature flower. Additional floral details can be seen in the drawings and fragment at AMES. Todzia (1980) states that the name is a synonym of *Campylocentrum schiedei* (Reichb. f.) Benth. ex Hemsl.

**Campylocentrum brenesii** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 268. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Sept. 1921, *Brenes 127* (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, CR 18479!, NY!; photograph, F ex CR!).

The type at CR is sterile. The material at NY and AMES is fertile and in good condition. The material at AMES is chosen as the lectotype because it was studied by Ames and Schweinfurth.

**Catasetum brenesii** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 225. 1923. TYPE: Costa Rica, Prov. Puntarenas, Guácimas, Pacific Plain, 100–150 m, Aug. 1922, *Brenes 294* (holotype, B, destroyed; lectotype, here designated, NY!; drawings, AMES!).

The type at NY is the only known material of this collection. The drawings at AMES provide additional floral details. The name is a synonym of *Catasetum integerrimum* J. D. Hook.

**Cryptocentrum gracilipes** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 246. 1923. TYPE: Costa Rica, Prov. Alajuela, Los Angeles de San Ramón, 1,000 m, July 1921, *Brenes 37* (holotype,

B, destroyed; lectotype, here designated, CR 18464!; drawing, AMES!; photograph, F ex CR!).

The material at Costa Rica is fertile and in good condition. The drawings at AMES agree with the lectotype.

**Cryptocentrum latifolium** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 247. 1923. TYPE: Costa Rica, Prov. Alajuela, Los Angeles de San Ramón, 1,050 m, July 1921, *Brenes 56* (holotype, B, destroyed; drawings, AMES!).

No isotypes, syntypes, or paratypes have been found. Only the protologue and the drawings at AMES give an indication of Schlechter's concept. The analytical sketch is selected as the lectotype. There is a Brenes specimen of *Cryptocentrum latifolium* at CR that has the same field number as the type of *C. gracilipes*, but the locality, date, and field number can be used to distinguish the two collections.

**Dichaea brenesii** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 264. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Nov. 1921, *Brenes 66* (holotype, B, destroyed; lectotype, here designated, CR 18458!; drawings, AMES!; photograph, F ex CR!).

The lectotype is the only known isotype. It is sterile, but agrees well with *Dichaea trulla* Reichb. f. and is probably synonymous with that species (Dressler, 1980).

**Dichaea ovatipetala** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 266. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, Nov. 1921, *Brenes 196* (holotype, B, destroyed; drawings, AMES!). Figure 4.

No isotypes, syntypes, or paratypes or any material annotated by Schlechter exist for this species. The analytical sketch is selected as the lectotype. The floral analysis shows the wide, ovate petals and short spurred lip that Schlechter (1923) cited as critical characters. The name is a synonym of *Dichaea muricata* (Sw.) Lindl.

**Dichaea oxyglossa** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 267. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,075 m, Nov. 1921, *Brenes 144* (holotype, B, de-



FIG. 4. Copy of Schlechter's sketch of *Dichaea ovatifolia* Schltr., *Brenes* 196.

stroyed; lectotype, here designated, CR 18455!; drawings, AMES!; photograph, F ex CR!).

The lectotype is the only known isotype. It has flowers and is in good condition. The drawings match the lectotype.

**Elleanthus albertii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 162. 1923. TYPE: Costa Rica, Prov. Alajuela, Los Angeles de San Ramón, 1,050 m, July 1921, *Brenes* 54 (holotype, B, destroyed; lectotype, here designated, CR 18425!; drawing, AMES!).

The lectotype is the only known isotype. The specimen is sterile. Schlechter's drawings and descriptions were based on dissected buds, making placement of this species difficult.

**Elleanthus brenesii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 11: 44. 1912. TYPE: Costa Rica, Prov. Alajuela, between San Ramón and San

Jerónimo, May 1901, *Brenes* 61 (holotype, B, destroyed; lectotype, AMES [*fide* Garay, 1978]; drawing, AMES!).

A portion of Schlechter's analytical drawings were published by Mansfeld (1931). Garay (1978) cites this name as a synonym of *Elleanthus xanthocomus* Reichb. f. ex J. D. Hook.

**Elleanthus poiformis** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 164. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Nov. 1921, *Brenes* 166 (holotype, B, destroyed; lectotype, here designated, CR 18423!; drawing, AMES!; photograph, F ex CR!).

The lectotype is the only known isotype. It has flowers and is in good condition.

**Encyclia brenesii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 221. 1923. TYPE: Costa Rica, Prov. Alajuela, San José de San Ramón, 1,025 m, Feb. 1922, *Brenes* 253 (holotype, B, destroyed; drawings, AMES!). Figure 5.

There are no isotypes, syntypes, or paratypes for this species. The drawings are selected as the type. Ames et al. (1935b) cite *Encyclia brenesii* as a synonym of *Epidendrum oncidioides* Lindl. var. *mooreana* (Rolfe) Ames, Hubbard, & Schweinfurth. Dressler (1980) considers it to be a synonym of *Encyclia mooreana* (Rolfe) Schltr.

**Epidendrum albertii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 208. 1923. TYPE: Costa Rica, Prov. Alajuela, Los Angeles de San Ramón, 1,000 m, July 1921, *Brenes* 49 (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, CR!; photograph, F ex CR!).

The isotype at CR has flowers and is in fair condition, but the isotype at AMES is chosen as lectotype because it was cited by Ames et al. (1936).

**Epidendrum brenesii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 209. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,050 m, Nov. 1921, *Brenes* 118 (holotype, B, destroyed; drawings, AMES!).

No isotypes, syntypes, or paratypes exist for this species, and no other material identified by Schlechter has been found. The species is distinct among Central American epidendrums. The an-

alytical drawings at AMES show the broad, bilobed lip that characterizes the species, so they are designated as the type.

***Epidendrum modestiflorum*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 213. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Sept. 1921, *Brenes 128* (holotype, B, destroyed; lectotype, here designated, AMES!).

The lectotype is the only known isotype. It is cited by Ames et al. (1936). They considered this species to be a part of a variable *Epidendrum ramosum* Jacq. (Ames et al., 1934), but it is likely that the two are distinct.

***Epidendrum muscicolum*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 214. 1923. TYPE: Costa Rica, Prov. Alajuela, Los Angeles de San Ramón, 1,050 m, July 1921, *Brenes 44* (holotype, B, destroyed; lectotype, here designated, AMES!; isotypes, CR 25799!, NY!; photograph, F ex CR!).

The lectotype is cited by Ames et al. (1936) and Williams (1940a). The name is the basionym of *Epidanthus muscicola* (Schltr.) L. O. Wms.

***Epidendrum ramonianum*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 217. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, Sept. 1921, *Brenes 101* (holotype, B, destroyed; lectotype, here designated, AMES!).

The lectotype is the only known isotype and is cited by Ames et al. (1936). The name is a synonym of *Epidendrum platystigma* Reichb. f.

***Epidendrum serricardium*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 218. 1923. TYPE: Costa Rica, Prov. Alajuela, San Juan de San Ramón, 1,025 m, Jan. 1922, *Brenes 254* (holotype, B, destroyed; lectotype, here designated, AMES!).

The lectotype is the only known isotype and is cited by Ames et al. (1936).

***Epidendrum subviolascens*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 219. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 900 m, Nov. 1921, *Brenes 174* (holotype, B, destroyed; lectotype, here designated, CR 25770!; drawings, AMES!).

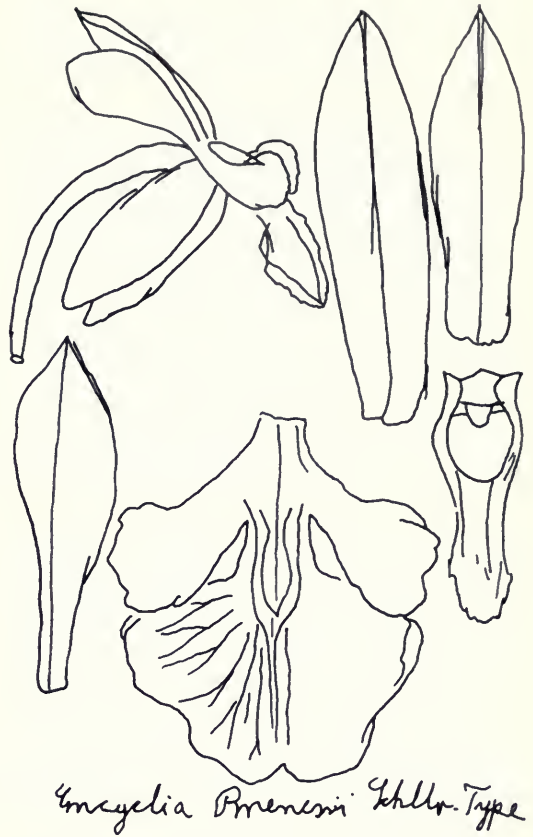


FIG. 5. Copy of Schlechter's sketch of *Encyclia brenesii* Schltr., *Brenes 253*.

The lectotype is the only known isotype. It has flowers and is in good condition. This name is a synonym of *Epidendrum coriifolium* Lindl.

***Fractunguis cuniculatis*** Schltr. var. *gracilis* Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 204. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,000 m, Jan. 1922, *Brenes 244* (holotype, B, destroyed; lectotype, here designated, CR 25886!; isotype, AMES!; photograph, F ex CR!).

The lectotype has flowers and is in good condition. This is a synonym of *Reichenbachianthus cuniculata* (Schltr.) Pabst.

***Habenaria brenesii*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 159. 1923. TYPE: Costa Rica, Prov. Alajuela, "La Calera" de San Mateo, 500 m, Sept. 1921, *Brenes 95* (holotype, B, de-



stroyed). NEOTYPE (here designated): Costa Rica, Prov. Alajuela, San Isidro de San Ramón, 1,050 m, 12 Nov. 1923, *Brenes* 58(670) (CR 25865!).

No isotypes, syntypes, or paratypes exist for this species. No drawings were found at AMES. The specimen designated as the lectotype was identified by Schlechter. Possibly, Schlechter saw the specimen before he described the species, because the label reads “*Habenaria brenesii* sp. nov.”. The field label has the field number, 58, in addition to the Brenes herbarium number, 670. The specimen matches the protologue, though the specimen is slightly smaller in overall size than described. The critical characters cited by Schlechter, the short apical segments and the short lateral segments of the lip, are found in the neotype.

**Hexadesmia brachyphylla** Schltr. var. **longior** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 205. 1923. TYPE: Costa Rica, Prov. Alajuela, Rio Jesús de San Ramón, 800 m, March 1921, *Brenes* 259 (holotype, v, destroyed; lectotype, here designated, CR 25874!; isotype, AMES!).

The lectotype has flowers and is in good condition. The name is a synonym of *Hexadesmia fusiformis* Griseb.

**Hexadesmia rigidipes** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 206. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,075 m, Nov. 1921, *Brenes* 145 (holotype, v, destroyed; lectotype, here designated, AMES!).

The lectotype is the only known isotype. The name is a synonym of *Hexadesmia fasciculata* Brogn.

**Kefersteinia alba** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 228. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, July 1922, *Brenes* 284 (holotype, v, destroyed).

There are no isotypes, syntypes, or paratypes for this species, and no specimens corresponding exactly with the protologue can be found. This species is probably synonymous with *Kefersteinia lactea* Reichb. f. as stated by Fowlie (1960). Schlechter had a poor understanding of that species, which also has a “two-lobed” callus, a winged column, and a relatively small habit. Until further study of the genus is made, no neotype can be chosen.

**Leochilus retusus** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 256. 1922. TYPE: Costa Rica, Prov. Alajuela, Maderal de San Mateo, 400 m, Jan. 1922, *Brenes* 229 (holotype, v, destroyed; lectotype, here designated, CR 25897!; isotype, AMES!).

The lectotype is in good condition, but the leaves and one of the flowers have disarticulated from the stem. Despite Schlechter’s (1923) contention that the two are distinct, this is definitely a synonym of *Leochilus scriptus* Reichb. f.

**Lepanthes apiculifera** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 177. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,100 m, July 1921, *Brenes* 72 (holotype, v, destroyed; lectotype, here designated, CR 25917!; drawings, AMES!).

The lectotype is the only known isotype. Comparison of the lectotype and drawings with the lectotype and drawings of *Lepanthes wercklei* Schltr. (Mansfeld, 1931) and the description of that species shows that the two are synonymous (Schweinfurth, 1937).

**Lepanthes brenesii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 177. 1923. TYPE: not designated. LECTOTYPE (here designated): Costa Rica, Prov. Alajuela, San Ramón, 1,025 m, Sept. 1921, *Brenes* 179 (AMES!; drawing, AMES!).

Schlechter (1923) cited both *Brenes* 179 and *Brenes* 7 without designating the type. No material of *Brenes* 7 is known to exist, whereas *Brenes* 179 is represented at AMES by a fragment mounted on a sheet with copies of Schlechter’s analytical drawings. One drawing is labeled “*Brenes* 7”, while the others are labeled “type”. The two collections appear to be of two distinct species, with the drawings labeled “type” matching the protologue and the fragment. It is likely that *Brenes* 179 is the basis for the drawings labeled as the type.

Ames (1936) considered this name to be a synonym of *Lepanthes turialvae* Reichb. f., but considering the confusion in the typification of that species and the variety of material now lumped under the name (Schultes, 1958), it is likely that this species may be good.

**Lepanthes inornata** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 178. 1923. TYPE: Costa Rica, Prov. Alajuela, Alto Calera de San Mateo, 850

m, Dec. 1921, *Brenes 216* (holotype, B, destroyed; holotype fragment, AMES!; drawings, AMES!).

The holotype fragment is the only known type material. It is a fragment of an inflorescence. A flower has been removed and mounted in the slide collection at AMES.

***Lepanthes ramonensis*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 179. 1923. TYPE: Costa Rica, Prov. Alajuela, San Rafael de San Ramón, 1,200 m, Nov. 1921, *Brenes 207* (holotype, B, destroyed; drawings, AMES!). Figure 6.

No isotypes, syntypes, or paratypes are known for this species. The analytical drawings show the floral characters necessary to distinguish the species, so they are designated as the type.

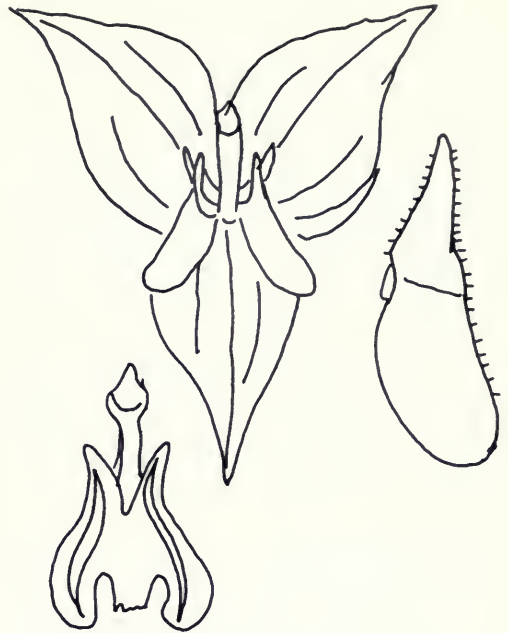
***Lepanthes tonduziana*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 180. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Sept. 1921, *Brenes 126* (holotype, B, destroyed; lectotype, here designated, CR 25914!; isotype, AMES!).

The lectotype is in good condition and has a single flower in a packet. Study confirms that it is synonymous with *Lepanthes brenesii* Schltr. The confusion with these species and *L. turialvae* Reichb. f. is discussed by Schultes (1958).

***Masdevallia diantha*** Schltr. Beih. Bot. Centralbl. 36(2): 384. 1901. TYPE: not designated. LECTOTYPE (here designated): Costa Rica, Prov. Alajuela, Cerro de San Isidro de San Ramón, 1,300 m, June 1901, *Brenes s.n.* (US!; drawings, AMES!; photograph, AMES ex US!).

Schlechter cited three collections in the protologue without designating a type: *Brenes s.n.*, *Wercklé s.n.* (673 in herb. Jiménez), and *Wercklé s.n.* (843 in herb. Jiménez). The analytical sketches at AMES and in Mansfeld (1931) were drawn from the Brenes specimen. The only known isosyntype is the Brenes specimen at US. *Masdevallia diantha* is a synonym of *M. chontalensis* Reichb. f.

***Maxillaria acutifolia*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 229. 1923. *non* Lindl. (1839). TYPE: not designated. SYNTYPES: Costa Rica, Prov. Alajuela, Distrito Volio de San Ramón, 1,250 m, Jan. 1923, *Brenes 235*;



*Lepanthes ramonensis* Schltr. Type

FIG. 6. Copy of Schlechter's sketch of *Lepanthes ramonensis* Schltr., *Brenes 207*.

Los Angeles de San Ramón, 1,000 m, July 1921, *Brenes 159* (B, destroyed). NEOTYPE (here designated): Costa Rica, Prov. San José, La Palma, 1,250 m, 15 Dec. 1922, *Brenes 173(504)* (AMES!).

No types or authentic specimens have been found, and there are no drawings. Ames (1936) cites *Brenes 173(504)*, and it is the only specimen of this species studied by Schweinfurth. The specimen has the diagnostic features cited by Schlechter—the linear, acute leaves and the round, rugulose pseudobulbs—and the lip is oblong, slightly 3-lobed, and minutely papillose, as described. This name is a later homonym of *Maxillaria acutifolia* Lindl. and is replaced by the name *M. angustissima* Ames, Hubbard, & Schweinfurth (1934).

***Maxillaria albertii*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 230. 1923. TYPE: Costa Rica, Prov. Alajuela, San Jesús de San Ramón, 800 m, March 1922, *Brenes 257* (holotype, B, destroyed; lectotype, here designated, CR 25960!; drawings, AMES!).



The lectotype is the only known isotype. It agrees with the drawings at AMES. The leaves are disarticulated, and it has a single flower.

**Maxillaria brenesii** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 231. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,050–1,250 m, Sept. 1921, *Brenes 78* (holotype, B, destroyed; lectotype, here designated, CR 25971!; isotype, AMES!; photograph, F *ex* CR!).

The lectotype is the only known isotype. It has suffered some damage, but has good vegetative parts, good inflorescences with bracts, and disarticulated flower buds. This name is a synonym of *Maxillaria brunnea* Linden & Reichb. f.

**Maxillaria costaricensis** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 232. 1923. TYPE: not designated. LECTOTYPE (here designated): Costa Rica, Prov. Alajuela, Distrito Volio de San Ramón, 1,050 m, Jan. 1922, *Brenes 237* (CR 26015!; isotype, AMES!; photograph, F *ex* CR!).

Schlechter cited two collections in the protologue, *Brenes 237* and *Brenes 263*, without indicating which was the type. The sheets of *Brenes 237* are the only known specimens of either collection. Ames (1936) cited *Brenes 236* as the type of *Maxillaria costaricensis*, but this was probably a misprint because *Brenes 237* is the only specimen of the species at AMES. *Maxillaria costaricensis* is synonymous with *M. variabilis* Bateman *ex* Lindl., though Schlechter (1923) distinguished it from that species by its smaller habit, larger flowers, and the yellow tint of the flowers.

**Maxillaria lactea** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 233. 1923. TYPE: Costa Rica, Prov. Alajuela, Maderal de San Mateo, 500 m, Sept. 1921, *Brenes 143* (holotype, B, destroyed; lectotype, here designated, CR!; isotype, AMES!; drawing, AMES!).

The lectotype has flowers and is in good condition. This name is a synonym of *Maxillaria brunnea* Linden & Reichb. f. Schlechter (1925) described a second *M. lactea*, from a different type, which is a synonym of *M. alba* (J. D. Hook.) Lindl.

**Maxillaria maleolens** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 233. 1923. TYPE: Costa Rica, Prov. Alajuela, Río Jesús de San Ramón,

800 m, June 1922, *Brenes 281* (holotype, B, destroyed; lectotype, here designated, CR 25985!; drawing, AMES!; photograph, F *ex* CR!).

The lectotype is the only known isotype. It is in fair condition and has a single, detached flower.

**Maxillaria ramonensis** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 236. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,050 m, Nov. 1921, *Brenes 154* (holotype, B, destroyed; lectotype, here designated, CR 25991!; isotype, AMES!; photograph, F *ex* CR!).

The lectotype has flowers and is in good condition.

**Maxillaria rubrilabia** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 236. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,050 m, *s.d.*, *Brenes 151* (holotype, B, destroyed; drawing, AMES!). Figure 7.

The drawings are selected as the type because no isotypes, syntypes, or paratypes are known to exist. The drawings at AMES show the broad mid-lobe of the lip and the short, obtuse, lateral lobes that Schlechter cites. *Maxillaria rubrilabia* is probably synonymous with *M. cucullata* Lindl., differing slightly in floral size and color and the width of the midlobe of the lip. Schlechter (1923) compared *M. rubrilabia* with *M. atrata* Reichb. f., but both of these species seem to be only slight variants of the widespread *M. cucullata*. Atwood (1981) has described two new species in the *M. cucullata* complex, suggesting that the group will need further study.

**Microstylis brenesii** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 167. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, July 1921, *Brenes 73* (holotype, B, destroyed; drawings, AMES!). Figure 8.

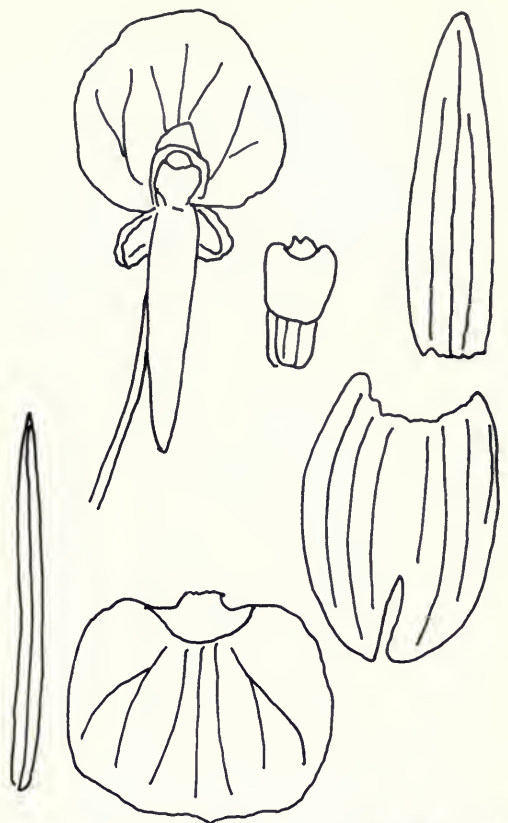
No isotypes, syntypes, or paratypes are known to exist. The drawings are selected as the type. Schlechter (1923) distinguished this species from *Microstylis histionantha* Link, Kl., & Otto by its smaller habit, smaller flowers, the flat lip, and the fused lateral sepals. The variability he describes is well within the range found in *M. histionantha*. Both names are synonyms of *Malaxis histionantha* (Link, Kl., & Otto) Garay & Dunst.





*Maxillaria rubrolabia* Gchlt. Type

FIG. 7. Copy of Schlechter's sketch of *Maxillaria rubrolabia* Schltr., *Brenes* 151.



*Microstylis Brenesii* Gchlt. Type

FIG. 8. Copy of Schlechter's sketch of *Microstylis brenesii* Schltr., *Brenes* 73.

**Mormodes stenoglossum** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 225. 1923. TYPE: Costa Rica, Prov. Alajuela, "La Calera" de San Mateo, 500–600 m, March 1922, *Brenes* 256 (holotype, B, destroyed; holotype fragment, AMES!; drawing, AMES!; photograph, F ex AMES!).

The holotype fragment is a single flower. Examination confirms that this is a synonym of *Mormodes flavidum* Kl. (Pabst, 1978).

**Notylia brenesii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 249. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 925 m, Nov. 1921, *Brenes* 173 (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, CR 26035!; photographs, F ex AMES!, F ex CR!).

The lectotype has mature flowers, while the isotype at CR has only buds. The species is a synonym of *Notylia trispala* Lindl. & Paxton.

**Notylia ramonensis** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 250. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 950 m, July 1921, *Brenes* 91 (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, CR!; photographs, F ex AMES!, F ex CR!).

The isotype at CR has a mature flower, but is in poor condition, i.e., disarticulated and insect-eaten. The lectotype is in good condition.

**Oncidium brenesii** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 257. 1923. TYPE: Costa Rica, Prov. Alajuela, San Ramón, 1,025 m, Jan. 1922, *Brenes* 240 (holotype, B, destroyed; drawing, AMES!). Figure 9.

No isotypes, syntypes, or paratypes are known to exist. The drawings at AMES are selected as the type. They show the unbranched inflorescence and



*Oncidium Brenesii* Schltr.

FIG. 9. Copy of Schlechter's sketch of *Oncidium brenesii* Schltr., *Brenes* 240.

the spreading flowers cited by Schlechter (1923) and the structure of the lip which is necessary to distinguish the species. The name is a synonym of *Oncidium obryzatum* Reichb. f. (Garay & Stacy, 1974).

***Oncidium naranjense*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 259. 1923. TYPE: Costa Rica, Prov. Alajuela, Cerro del Espirito Santo a Naranjo de Alajuela, 1,075 m, June 1921, *Brenes* 22 (holotype, B, destroyed; lectotype, here designated, CR 26061!; isotype, AMES; photograph, F ex CR!).

The lectotype is in excellent condition. The name is a synonym of *Oncidium ansiferum* Reichb. f. (Garay & Stacy, 1974).

***Oncidium paleatum*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 260. 1923. TYPE: Costa Rica, Prov. Alajuela, San Rafael de San Ramón, 1,250

m, Nov. 1921, *Brenes* 206 (holotype, B, destroyed; drawings, AMES!).

No isotypes, syntypes, or paratypes are known to exist. The drawings are selected as the type. In the protologue, Schlechter compares this species with *Oncidium bracteatum* Reichb. f., distinguishing *O. paleatum* by its shiny pedicel and rachis, many-flowered inflorescence, broad flowers, column, and the wider lip with a short isthmus and a wider forelobe. Garay & Stacy (1974) cite *O. paleatum* as a synonym of *O. henrici-gustavi* Kränzl., which Kränzlin (1922) distinguished from *O. bracteatum* by the large lateral lobes of the lip and the winged column. *Oncidium bracteatum* is a wide-ranging species that is variable across its range. The width of the lip is particularly variable, and all of the distinguishing characters cited by Schlechter and by Kränzlin are inadequate for distinguishing species within the group. Winged columns are found in most *Oncidium* species.

It should be noted that Kränzlin (1922) also cited *Endres* 292, the type of *O. henrici-gustavi*, under *O. bracteatum* in both the taxonomic treatment and the list of exsiccatae. This may invalidate the name.

***Ornithidium aurantiacum*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 241. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Nov. 1921, *Brenes* 129 (holotype, B, destroyed; drawing, AMES!).

No isotypes, syntypes, or paratypes are known to exist, so the drawings are selected as the type. Schlechter distinguished this species from *Ornithidium wercklei* Schltr. (= *Maxillaria wercklei* (Schltr.) L. O. Wms.) by its larger flowers and narrow, ligulate pseudobulbs, but these characters do not distinguish the two. Later, Williams (1940b) suggested that *O. aurantiacum* was a synonym of *M. wercklei*. Allen (1949) incorrectly cited *Maxillaria aurantiaca* Schltr. (1924), based on a Colombian type, as a synonym of this species.

***Ornithidium neglectum*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 242. 1923. TYPE: from cultivated material labeled "Costa Rica", Bot. Gart. Berlin-Dahlem, 1910, *s.l.*, *s.n.* (holotype, B, destroyed; drawings, AMES!).

No isotypes, syntypes, or paratypes of this species can be found. In addition to the type, Schlechter (1923) cites *Brenes* 164, but no specimens from

this collection, or any material identified by Schlechter, can be found. Schlechter's detailed analytical drawings are selected as the type. The floral sketch of this species was published (Mansfeld, 1931). The name is the basionym of *Maxillaria neglecta* (Schltr.) L. O. Wms.

**Ornithidium pallidiflavum** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 242. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Sept. 1921, *Brenes 135* (holotype, B, destroyed; lectotype, here designated, CR 26021!; isotype, AMES!; photograph, F ex CR!).

The lectotype has flowers and is in good condition. The name is a synonym of *Maxillaria microphyton* Schltr.

**Ornithidium ramonense** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 243. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,050–1,200 m, Sept. 1921, *Brenes 137* (holotype, B, destroyed; drawings, AMES!). Figure 10.

No isotypes, syntypes, or paratypes are known to exist. The drawings are selected as the type. They show the small lateral lobes and broad mid-lobe of the lip that distinguish the species. When transferring the species to *Maxillaria*, Ames et al. (1934) found that the name *Maxillaria ramonensis* had been used by Schlechter (1923). They proposed the new name *M. flava*, based on the same type. The drawings also become the type for that name.

**Pleurothallis biflora** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 181. 1923. *non* Focke (1849). TYPE: Costa Rica, Prov. Alajuela, San Ramón, 1,025 m, Nov. 1921, *Brenes 176* (holotype, B, destroyed; lectotype, here designated, AMES!; isotypes, CR 26141!, NY!; photographs, F ex CR!).

The lectotype is in good condition. Ames et al. (1935a) replaced the illegitimate *Pleurothallis biflora* Schltr. with *P. geminiflora* Ames, Hubb. & C. Schweinf., but the citation was incorrect, making their name invalid. The isotype at AMES, studied and annotated by Schweinfurth, is selected as the neotype. The name is a synonym of *P. calypstrostele* Schltr. (Williams, 1946).

**Pleurothallis brenesii** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 182. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón,

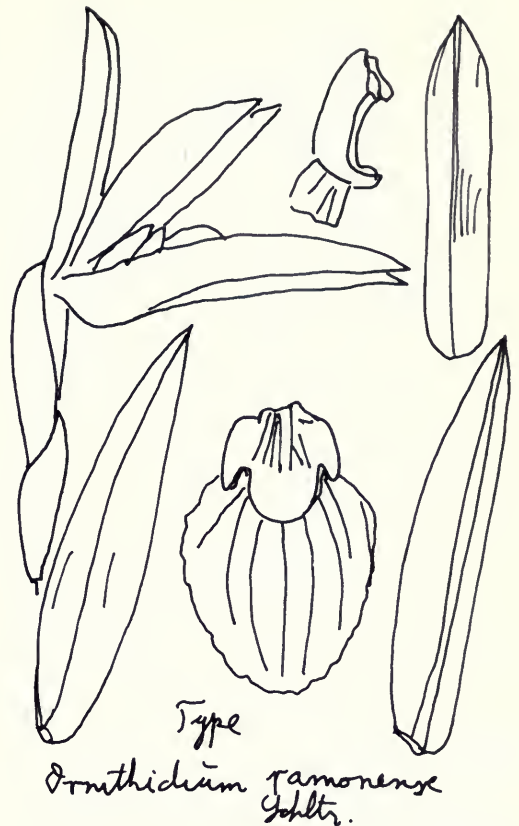


FIG. 10. Copy of Schlechter's sketch of *Ornithidium ramonense* Schltr., *Brenes 137*.

950 m, June 1921, *Brenes 30* (holotype, B, destroyed; lectotype, here designated, CR 26138!; isotype, AMES!).

The lectotype has flowers and is in good condition. The name is a synonym of *Pleurothallis fulgens* Reichb. f.

**Pleurothallis brevis** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 183. 1923. TYPE: not designated. LECTOTYPE (here designated): Costa Rica, Prov. Cartago, near Cartago, 1,450 m, April 1922, *Brenes 276* (lectotype, B, destroyed; drawings, AMES!). Figure 11.

Schlechter (1923) cited three collections without indication of which was the type: *Brenes 276*, *Brenes 13*, and *Brenes 40*. No specimens of any of these collections can be found, except for a sketch of *Brenes 276* at AMES (fig. 11). The drawing shows the pubescent flowers and oblong-ligulate lip that



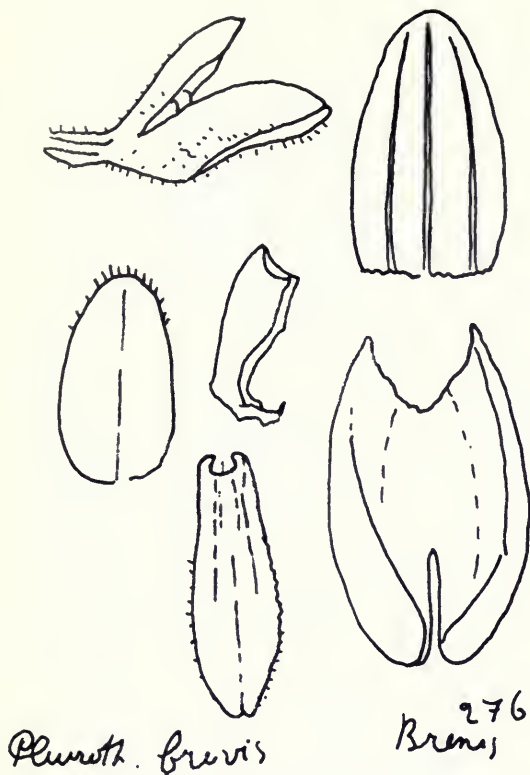


FIG. 11. Copy of Schlechter's sketch of *Pleurothallis brevis* Schltr., Brenes 276.

Schlechter cites. It is selected as the type. The name is a synonym of *Pleurothallis memor* Reichb. f.

***Pleurothallis brunnescens*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 183. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,100 m, June 1921, *Brenes* 27 (holotype, B, destroyed. NEOTYPE (here designated): Costa Rica, Prov. Alajuela, San Isidro de San Ramón, 1,075 m, 12 Nov. 1923, *Brenes* 824(212) (CR 26118!).

No isotypes, syntypes, or paratypes of this species are known to exist. The neotype conforms to the protologue.

***Pleurothallis calerae*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 184. 1923. TYPE: Costa Rica, Prov. Alajuela, Alto de Calera de San Mateo, 850 m, Jan. 1922, *Brenes* 228 (holotype, B, destroyed; drawings, AMES!). Figure 12.

No isotypes, syntypes, or paratypes of this species are known. The drawings at AMES show the mi-

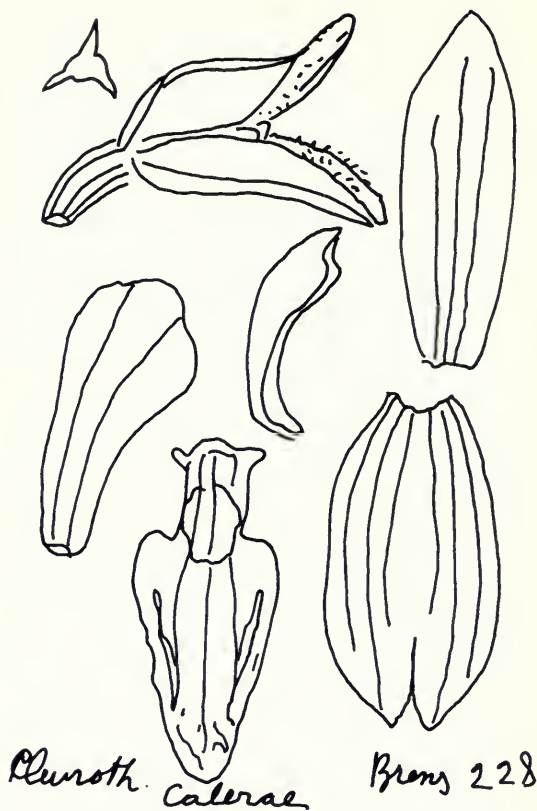


FIG. 12. Copy of Schlechter's sketch of *Pleurothallis calerae* Schltr., Brenes 228.

nutely auriculate lip with a broad lamina and the pubescent sepals that Schlechter cites. They are designated as the type. This name is a synonym of *Pleurothallis immersa* Linden & Reichb. f.

***Pleurothallis ciliilabia*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 185. 1923. TYPE: Costa Rica, Prov. Alajuela, Alto de "La Calera" de San Mateo, 850 m, Dec. 1921, *Brenes* 215 (holotype, B, destroyed; drawing, AMES!). Figure 13.

No isotypes, syntypes, or paratypes of this species are known. The drawing at AMES is not adequate to distinguish the species. It does not show the characteristic lip and clinandrium. An adequate neotype is not available. The name is a synonym of *Pleurothallis barbulata* Lindl.

***Pleurothallis convallaria*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 185. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,100 m, July 1921, *Brenes* 84 (holotype, B, de-

stroyed; lectotype, here designated, AMES!; isotype, CR 26112!; photograph, F ex CR!).

The isotype at CR has neither flowers nor buds, but the lectotype at AMES has flowers and is in excellent condition.

**Pleurothallis dryadum** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 186. 1923. *non* Schltr. (1922). TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 950 m, June 1921, *Brenes* 36 (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, CR 26147!; drawings, AMES!; photograph, F ex CR!).

The isotype at CR is sterile, but the lectotype at AMES has flowers. Specimens of the *Pleurothallis* are in a mixed mat with mosses and leafy liverworts. The name *Pleurothallis dryadum* Schltr. (1923) is a later homonym of *P. dryadum* Schltr. (1922), based on a specimen from Panama. Ames et al. (1934) replaced the illegitimate name with *P. integrilabia* based on the same type. *Pleurothallis dryadum* Schltr. (1923) and *P. integrilabia* are both synonyms of *P. grobyi* Bateman ex Lindl.

**Pleurothallis ehrhartiiflora** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 187. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,000 m, Sept. 1921, *Brenes* 141 (holotype, B, destroyed; lectotype, here designated, CR 26116!; isotype, AMES!, NY!).

The lectotype has flowers and is in good condition. The name is a synonym of *Pleurothallis costaricensis* Rolfe.

**Pleurothallis eumecocaulon** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 187. 1923. TYPE: Costa Rica, Prov. Alajuela, Distrito ("Hazienda") Volio de San Ramón, 1,270 m, Jan. 1922, *Brenes* 232 (holotype, B, destroyed; drawings, AMES!). Figure 14.

No isotypes, syntypes, or paratypes can be found. The drawings are selected as the type. They show the short, acuminate sepals, the papillose, hairy petals, and the ovate lip cited by Schlechter.

**Pleurothallis flavescens** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 188. 1923. TYPE: not designated (drawings, AMES!).

Schlechter (1923) cited two specimens in the



*Pleurothallis ciliilabia* 215  
Brenes

FIG. 13. Copy of Schlechter's sketch of *Pleurothallis ciliilabia* Schltr., *Brenes* 215.

protologue, *Brenes* 185 and *Brenes* 218, without indicating the type. No specimens from either collection can be found. The drawings are not labeled to indicate on which collection they were based, but they are selected as the lectotype because they are the only indication, outside of the protologue, of Schlechter's concept of the species. Dunsterville & Garay (1966) cite the name as a synonym of *Restrepiella tubulosa* (Lindl.) Garay & Dunst.

**Pleurothallis gonioglossa** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 189. 1923. TYPE: Costa Rica, Prov. Alajuela, San Ramón, 1,025 m, Nov. 1921, *Brenes* 178 (holotype, B, destroyed; lectotype, here designated, CR 26142!; isotypes, AMES!, NY!; drawings, AMES!; photograph, F ex CR!).

The lectotype is mounted on a sheet with fronds of *Elaphoglossum*. There is a single flower in a



*Pleurothallis eumecocaulon* Brenne 232

FIG. 14. Copy of Schlechter's sketch of *Pleurothallis eumecocaulon* Schltr., Brenes 232.

packet. The name is a synonym of *Pleurothallis sanchoi* Ames.

***Pleurothallis homalanthoides*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 190. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, July 1921, *Brenes 68* (holotype, B, destroyed; holotype fragment, AMES!; drawings, AMES!).

The holotype fragment at AMES is the only extant type material. It has flowers and is in good condition.

***Pleurothallis nemorum*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 191. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, July 1921, *Brenes 76* (holotype, B, destroyed; drawing, AMES!). NEOTYPE (here des-

ignated): Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,100 m, Sept. 1921, *Brenes 121* (AMES!; isoneotype, CR!).

No isotypes are known to exist, so a paratype is chosen as the lectotype. The specimen at CR has no flowers, but the specimen at AMES has flowers and is in good condition. Luer (1977) distinguished *Pleurothallis nemorum* from *P. homalantha* Schltr., but examination of the types and other authentic specimens leads me to follow Ames (1936) in treating the two as synonyms.

***Pleurothallis pauciflora*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 192. 1923. TYPE: Costa Rica, Prov. Alajuela, San Ramón, 1,125 m, Nov. 1921, *Brenes 177* (holotype, B, destroyed; lectotype, here designated, CR 26193!; isotype, AMES!; photograph, F ex CR!).



The lectotype has flowers but is in poor condition. The name is a synonym of *Pleurothallis pruinosa* Lindl.

***Pleurothallis phyllocardioides*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 193. 1923. TYPE: Costa Rica, Prov. Alajuela, San Ramón, 1,025 m, June 1922, *Brenes* 290 (holotype, B, destroyed; holotype fragment, AMES!; isotype, NY!; drawing, AMES!).

The type fragment is in good condition.

***Pleurothallis ramonensis*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 193. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, July 1921, *Brenes* 88 (holotype, B, destroyed; lectotype, here designated, AMES!).

The lectotype is the only extant isotype. It has flowers and is in good condition. Schlechter also cites *Brenes* 288 as a possible representative, but no specimens from that collection are known.

***Pleurothallis stelidiformis*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 195. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,075 m, Nov. 1921, *Brenes* 150 (holotype, B, destroyed; lectotype, here designated, CR 26123!; isotype, NY!; drawing, AMES!; photograph, F ex AMES!).

The lectotype has flowers and is in good condition. The analytical sketch at AMES does not have the denticulate lip as shown in Luer (1977). The protologue describes the petals as being marginally ciliolate, and the types have ciliate, not denticulate, petals. For this reason, it is likely that this species is not a synonym of *Pleurothallis denticulata* Rolfe ex Ames as cited by Luer (1977) and Schweinfurth (1937).

***Pleurothallis trachystoma*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 196. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 950 m, June 1921, *Brenes* 40 (holotype, B, destroyed; drawings, AMES!). Figure 15.

No isotypes, paratypes, or syntypes can be found. The drawing at AMES is chosen as the lectotype because no adequate neotype could be found.

***Pleurothallis vaginata*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 197. 1923. TYPE: Costa

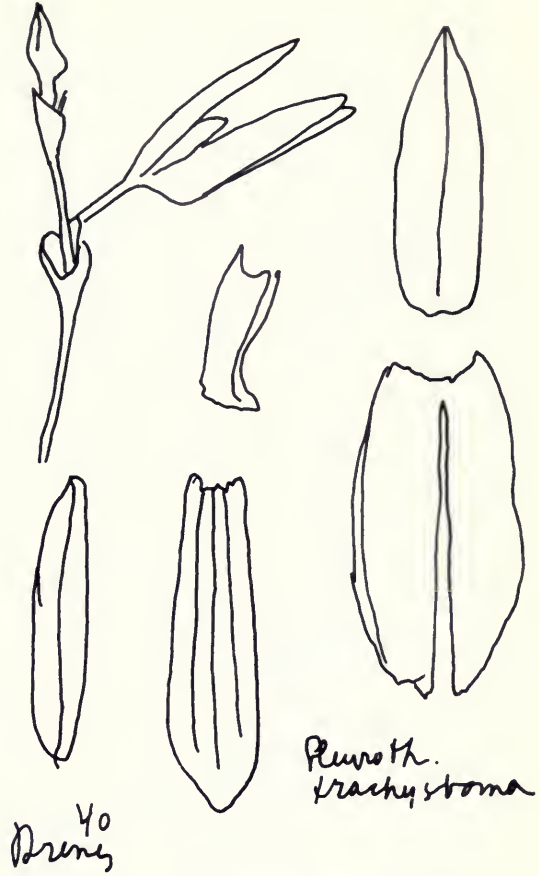


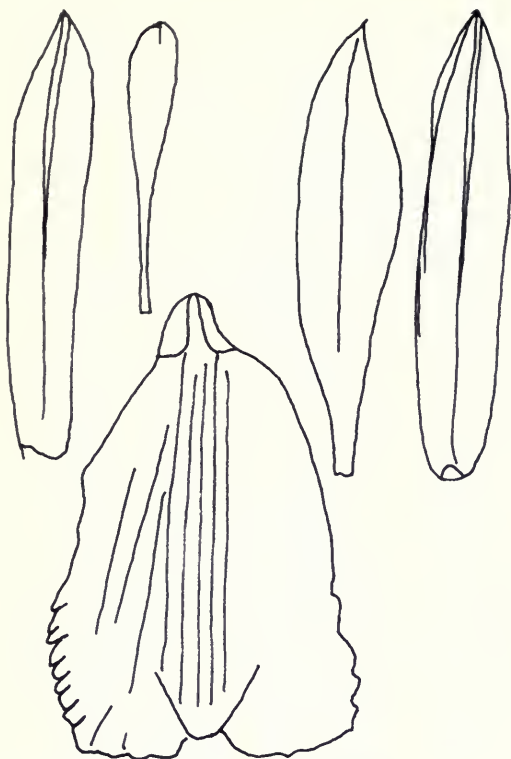
FIG. 15. Copy of Schlechter's sketch of *Pleurothallis trachystoma* Schltr., *Brenes* 40.

Rica, Prov. Alajuela, San Pedro de San Ramón, 1,200 m, Sept. 1921, *Brenes* 122 (holotype, B, destroyed; lectotype, here designated, AMES [fide Garay & Sweet, 1974]; drawings, AMES!).

Garay & Sweet (1974) cite this name in synonymy under *Pleurothallis imraei* Lindl.

***Pleurothallis violaceosea*** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 198. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,075 m, Nov. 1921, *Brenes* 153 (holotype, B, destroyed; lectotype, here designated, CR 26227!; isotype, AMES!, NY!).

The isotype has flowers and is in good condition. The large bract, long acute petals, and broad-based lip show that the species is a synonym of *Pleurothallis loranthophylla* Reichb. f.



*Sobralia macra* Schltr. Brenes 295

FIG. 16. Copy of Schlechter's sketch of *Sobralia macra* Schltr., Brenes 295.

**Polystachya costaricensis** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 223. 1923. TYPE: Costa Rica, Prov. Alajuela, Maderal de San Mateo, 450–600 m, Sept. 1921, *Brenes 94* (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, CR 26234!; photograph, F ex CR!).

The isotype at CR has no flowers and is badly insect-damaged, but the lectotype at AMES has flowers and is in good condition. The name is a synonym of *Polystachya foliosa* (J. D. Hook.) Reichb. f.

**Ponthieva brenesii** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 165. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,200 m, July 1921, *Brenes 83* (holotype, B, destroyed; lectotype, here designated, CR 26246!; isotypes, AMES!, NY!; photograph, F ex CR!).

The lectotype has flowers and fruits and is in excellent condition. Dressler (1980) considers the species to be distinct, but it appears to be synonymous with *Ponthieva maculata* Lindl.

**Ponthieva graciliscapa** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 166. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, Sept. 1921, *Brenes 100* (holotype, B, destroyed; lectotype, here designated, CR 26238!; isotype, AMES!, NY!; photograph, F ex CR!).

The lectotype has flowers and is in good condition. The type confirms that the name is a synonym of *Ponthieva tuerckheimii* Schltr.

**Sepalosaccus humilis** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 245. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,075 m, Sept. 1921, *Brenes 130* (holotype, B, destroyed; lectotype, here designated, AMES!; isotypes, CR 26268!, NY!; photograph, F ex CR!).

The flowers of the isotype at CR are insect-damaged, so the isotype at AMES is selected as the lectotype. Schlechter's analytical drawing of this species has been published (Mansfeld, 1931). This specimen typifies the genus *Sepalosaccus* Schltr. The name is a synonym of *Sepalosaccus strumatum* (Endr. & Reichb. f.) Garay.

**Sobralia macra** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 161. 1923. TYPE: Costa Rica, Prov. Alajuela, Los Angeles de Heredia, 1,500 m, Aug. 1922, *Brenes 295* (holotype, B, destroyed; drawings, AMES!). Figure 16.

No isotypes, syntypes, or paratypes of this species are known to exist. The drawings are designated as the type.

**Sobralia neglecta** Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 161. 1923. TYPE: Costa Rica, Prov. Alajuela, Maderal de San Mateo, 450 m, April 1922, *Brenes 279* (holotype, B, destroyed; lectotype, here designated, AMES!; drawing, AMES!).

The sterile lectotype is the only extant isotype. Floral details appear on the drawing at AMES.

**Spiranthes brenesii** Schltr., Repert. Sp. Nov. 10: 481. 1918. TYPE: Costa Rica, Prov. San José, Piedades de San José, 1,100 m, May 1901, *Brenes*

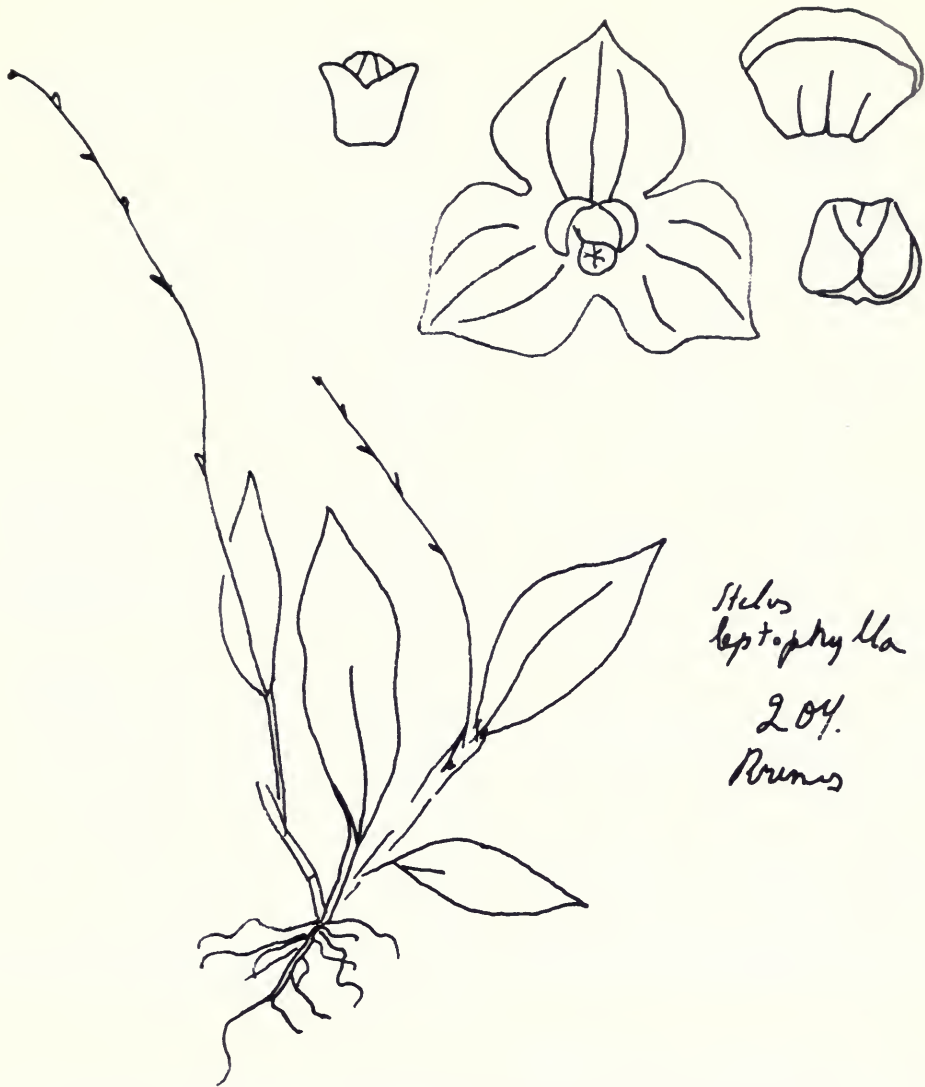


FIG. 17. Copy of Schlechter's sketch of *Stelis leptophylla* Schltr., *Brenes* 204.

14282 (holotype, B, destroyed; lectotype, here designated, AMES!; isotype, US!; drawing, AMES!).

The lectotype has flowers and is in good condition. The analytical sketches were published as *Brachystele brenesii* (Schltr.) Schltr. (Mansfeld, 1931). The name is a synonym of *Brachystele guyanensis* (Lindl.) Schltr. (Garay, 1982).

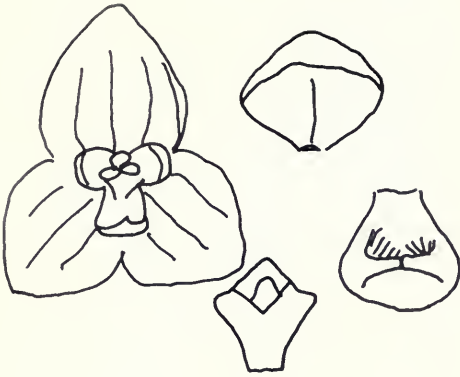
***Stelis albertii*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 170. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,150 m, Sept. 1921, *Brenes* 118 (holotype, B, destroyed;

holotype fragment, AMES!; drawing, AMES!, photograph, AMES ex B!).

The holotype fragment at AMES is the only extant type material. The name is a synonym of *Stelis pardipes* Reichb. f. (Garay, 1979).

***Stelis bracteata*** Schltr., *Repert. Sp. Nov. Regni Veg. Beih.* 19: 171. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,050 m, Nov. 1921, *Brenes* 155 (holotype, B, destroyed; holotype fragment, AMES; drawing, AMES!; photograph, AMES ex B!).





*Stelis*

Brenes 184.

FIG. 18. Copy of Schlechter's sketch of *Stelis ramonensis* Schltr., Brenes 184.

The holotype fragment is the only extant type material. The name is a synonym of *Stelis powellii* Schltr. (Garay, 1978).

***Stelis brenesii* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 192. 1923. TYPE: Costa Rica, Prov. Alajuela, Santiago de San Ramón, 1,075 m, Nov. 1921, *Brenes 148* (holotype, B, destroyed; holotype fragment, AMES!; drawing, AMES!; photograph, AMES ex B!).

The fragment of the holotype is the only extant type material. The name is a synonym of *Stelis parvula* Lindl. (Garay, 1979).

***Stelis brevis* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 172. 1923. TYPE: Costa Rica, Prov. Alajuela, San Rafael de San Ramón, 1,250 m, Nov. 1921, *Brenes 201* (holotype, B, destroyed; holotype fragment, AMES!; drawings, AMES!; photograph, AMES ex B!).

The fragment of the holotype is the only extant type material. In 1927 Ames noted on a herbarium sheet that *Stelis brevis* is conspecific with *S. parvula* Lindl.

***Stelis leptophylla* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 174. 1923. TYPE: Costa Rica,

Prov. Alajuela, San Rafael de San Ramón, 1,250 m, Nov. 1921, *Brenes 204* (holotype, B, destroyed; drawing, AMES!; photograph, AMES ex B!). Figure 17.

No isotypes, syntypes, or paratypes of this species are known to exist. Schlechter (1923) distinguished this species by its thin leaves with distinctly petiolate leaves. He cited a paratype, *Pittier 10168*, which may still exist. Typification must await a search for the paratype. Ames (1936) and Garay (1979) cite this species as a synonym of *Stelis cooperi* Schltr.

***Stelis praesecta* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 175. 1923. TYPE: Costa Rica, Prov. Alajuela, San Ramón, 1,035 m, Nov. 1921, *Brenes 189* (holotype, B, destroyed; photograph, AMES ex B!). NEOTYPE (here designated): Costa Rica, Prov. Cartago, *Lankester 468* (AMES!).

No isotypes, syntypes, or paratypes of this species are known to exist. The neotype conforms to the protologue. It is the type of *Stelis propinqua* Ames. Schlechter's description is indistinguishable from that of *S. propinqua*. The distinguishing character used by Schlechter, the apiculate lip, is present in all species in the section *Monostachyae* (Garay, 1979). Ames (1936) placed his *S. propinqua* in synonymy with *S. endresii* Reichb. f. (= *S. argentata* Lindl. fide Garay [1974]). *Stelis propinqua* is distinct and can be distinguished from that species by its glabrous sepals and the small lobes of the lip.

***Stelis ramonensis* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 176. 1923. TYPE: Costa Rica, Prov. Alajuela, San Ramón, 1,125 m, Nov. 1921, *Brenes 184* (holotype, B, destroyed; drawings, AMES!; photograph, AMES ex B!). Figure 18.

The drawings at AMES clearly show the two-parted, ridgelike callus on the lip and large floral bracts which are described in the protologue. They are chosen as the lectotype in the absence of a suitable type material. The name is a synonym of *Stelis parvula* Reichb. f. (Garay, 1974).

***Stelis violascens* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 176. 1923. TYPE: Costa Rica, Prov. Alajuela, San Pedro de San Ramón, 1,200 m, Sept. 1921, *Brenes 108* (holotype, B, de-



FIG. 19. Copy of Schlechter's sketch of *Systeloglossum costaricense* Schltr., Brenes 19.

*Systeloglossum costaricense* Schltr.

stroyed; lectotype, here designated, CR 26305!; isotypes, AMES!, NY!; photographs, AMES ex B!, F ex CR!).

The lectotype has flowers and is in good condition. The name is a synonym of *Stelis propinqua* Ames (Garay, 1979).

***Systeloglossum costaricense* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 252. 1923. TYPE: Costa Rica, Prov. Alajuela, Alto de Santiago de San Ramón, 1,075 m, July 1921, *Brenes 19* (holotype, B, destroyed; drawings, AMES!). Figure 19.

The detailed drawings at AMES are selected as the type because no isotypes, syntypes, or para-

types can be found. This species is the type for the genus *Systeloglossum*.

***Telipogon gracilipes* Schltr.**, Repert. Sp. Nov. Regni Veg. Beih. 19: 263. 1923. TYPE: Costa Rica, Prov. Alajuela, Palmira, 1,825 m, April 1921, *Brenes 8* (holotype, B, destroyed; drawings, AMES!). Figure 20.

No isotypes, syntypes, or paratypes can be found. The drawings at AMES do not adequately distinguish the species. Schlechter (1923) distinguished this species from *Telipogon psavii* Schltr. by the number of veins on the lip and petals, the habit and leaf shape, the petal shape, the lip which lacks a callus but which has acute papillae, and the lack of reticulation in the veins of the lip. His sketch

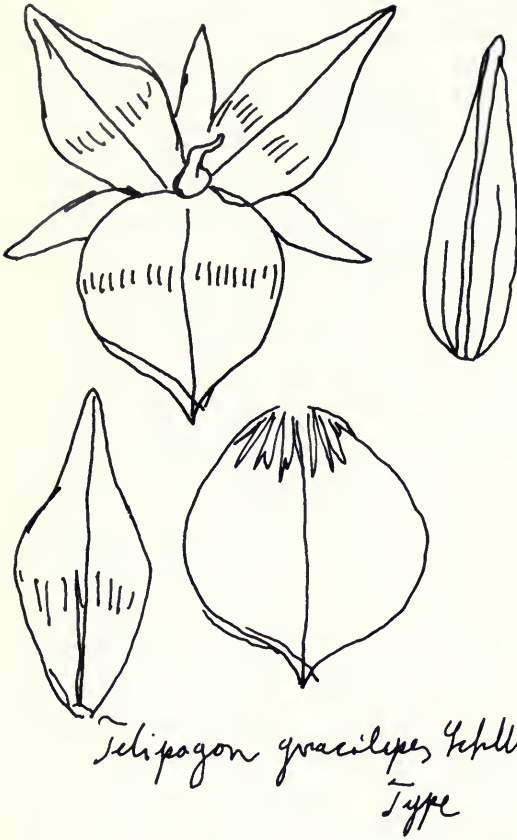


FIG. 20. Copy of Schlechter's sketch of *Telipogon gracilipes* Schltr., Brenes 8.

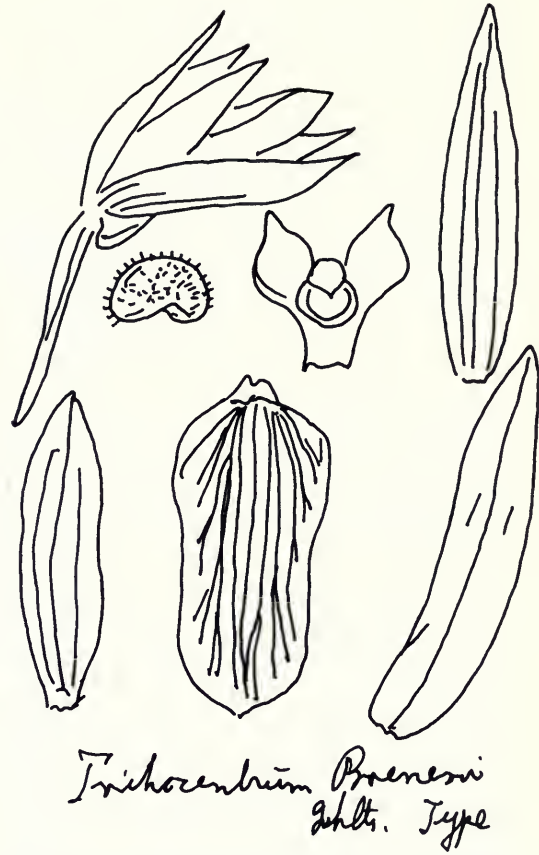


FIG. 21. Copy of Schlechter's sketch of *Trichocentrum brenesii* Schltr., Brenes 116.

of the flowers does not depict the habit, the leaves, or the lack of reticulation on the lip. The localized variability of *Telipogon* is so great, especially with regard to the shape and venation of the tepals, that I hesitate to use the incomplete sketch as a type. A survey of the type locality will be necessary before the species can be adequately typified.

***Trichocentrum brenesii* Schltr., Repert. Sp. Nov. Regni Veg. Beih. 19: 248. 1923. TYPE:** Costa Rica, Prov. Alajuela, San Pedro de San Ramón, Sept. 1921, *Brenes 116* (holotype, v, destroyed; drawings, AMES!). Figure 21.

The drawings at AMES are detailed and adequately distinguish the species. They are selected as the type due to the absence of any isotypes, neotypes, or paratypes.

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